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Prevalence of presbyopia among smoking population

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Abstract

Background: Presbyopia is a natural part of the aging process of the eye in which the loss of flexibility of the crystalline lens takes place over a number of years. This study aimed to determine differences in age of onset and progression of presbyopia between smoking and non smoking patients in Qazvin-Iran.

Material and methods: A comparative cross-sectional study was carried out in Boali Hospital in Qazvin-Iran between 2011 and 2012. Within the context of this survey, 304 eligible participants over 30 years age were randomly selected for interview and underwent near-vision testing. Of these, 152 participants were smokers and formed the case group and 152 non-smoking people were considered control participants. Functional presbyopia was defined as requiring at least +0.75 diopter in order to read the N8 optotype at a distance of 35 cm in the participant's usual visual state. Optometric and ophthalmologic examinations were performed on all participants. presbyopic correction coverage were calculated and the results were analyzed using SPSS Program with $P<0.05$.

Results: A total of 304 participants' records were evaluated. Of those, 152 cigarette smokers were categorized as samples and 152 normal patients as control group. Eighty-five patients with ages between 39-40 year among smoking group needed to use glasses for near tasks, but nobody in normal group needed presbyopic glasses. There were significant differences in the age of onset and or progression of presbyopia were detected between smoking and normal patients ($p<0.05$).

Conclusions: Our study is the first population-based investigation of presbyopia in Iran, with the aim of determining age of onset and progression of presbyopia among smoking people related to normal population. The results of this study indicate that the onset of presbyopia among smoking group was earlier than normal group. statistically significant difference in the age of onset and progression of presbyopia was found between smoking and non-smoking patients.

Key words: Presbyopia, smoker people, prevalence, lens flexibility, accommodation

Introduction

Presbyopia is the age-related reduced accommodation and is often associated with a progressive inability to read fine print and to write [1]. The onset of presbyopia depending to the near tasks but is gradual and the patient's accommodative amplitude becomes inadequate for his or her visual needs. There are substantial optical changes in the human lens with increasing age and during accommodation, since both the magnitude and the sign of the spherical aberration change with age and stretching [2]. Good near vision is important, even among populations who use it for tasks other than reading and writing. The human lenses exhibited a distinct viscoelastic behavior and the research evidence most strongly supports a loss of elasticity of the crystalline lens, although changes in the lens's curvature result from continual growth and loss of power of the ciliary muscles. With progressive hardening and the loss of elasticity of the lens, and its ectodermal growth it will become harder and harder for the ciliary muscle to accommodate by contraction [3-5]. In contrast to this studies, schachar and Pierscionek demonstrates that lens hardness is not related to the age-related decline in accommodative amplitude [6].

The prevalence of presbyopia in different countries is reported by various studies. It is estimated that there were 1.04 billion people globally with presbyopia in 2005, of whom 517 million had no spectacles or inadequate spectacles [7]. Of 400 people aged 40–50 years in Zanzibar, East Africa, the overall prevalence of presbyopia was 89.2%. Of those who needed correction, only 17.7% had spectacles [8]. In south India of 5587 subjects 30 years of age or older, the age-, gender-, and area-adjusted prevalence of presbyopia was 55.3% [9].

Smoking fatally affects all the major parts of the body and can even be a major contributing risk factor for visual impairment. Many studies have explored the association between smoking and age-related eye diseases ARED. A total of 61.7% of One thousand seven hundred nine persons age 40 years and older who resided in 3 villages of Tanzania were presbyopic. A higher prevalence of presbyopia was associated with increased age,